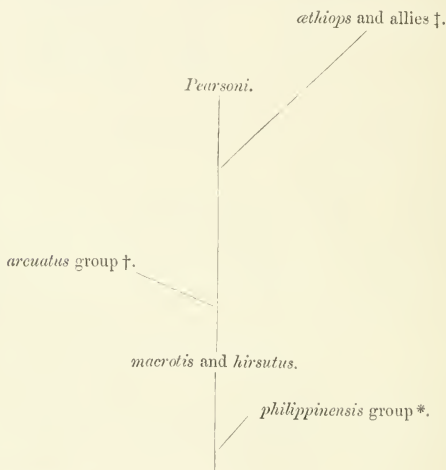


here under consideration are on a higher level of development than the Oriental *Rh. macrotis*: in several important cranial characters, in the dentition, in the wing-structure. I have pointed out elsewhere that also the other Ethiopian *Rhinolophi*, without any exception, have their *more primitive* relations in the Oriental Region. Thus the general conclusion arrived at may now be briefly formulated as follows:—*All the Ethiopian representatives of the genus Rhinolophus are of Oriental origin.*

The subjoined diagram gives a view of the probable inter-relations of the species and groups reviewed above:—



XXXII.—*Descriptions and Records of Bees.*—II.

By T. D. A. COCKERELL, University of Colorado.

Euryglossa ephippiata, Smith.

Queensland, no. 94. 61, also labelled Ridg. 11.93; 701. ♀.

Except for the smaller size, it has a strong superficial resemblance to *Callomelitta picta*. The character of the

* Ann. & Mag. Nat. Hist., August 1905, p. 243.

† *Suprà*, p. 281.

‡ *Op. cit.* (7) xv. (1905) pp. 75-76 ("Remarks").

relative lengths of the submarginal cells, given by authors to separate *Euryglossa* from *Prosopis*, is hardly distinctive; much better is the rounded head of *Euryglossa*, with the broad face lacking the characteristic markings of *Prosopis*.

Euryglossa rubricata, Smith.

Queensland, no. 94. 61, also labelled Ridg. 11.93; 859. ♀.

Close to *E. ephippiata*, but easily separated by the red antennæ (even the scape red), the black axillæ, the light testaceous tegulæ, the red tibiæ and tarsi (anterior tibiæ with a large black spot), and the mainly dull red abdomen.

Euryglossa subsericea, sp. n.

♀.—Length between 7 and 8 mm.

Head and thorax shining black; abdomen very dark blue with a satiny gloss, hind margins of segments narrowly black. Mandibles black, with a dark red stain in the middle; clypeus with scattered rather feeble punctures; front dullish, densely striato-punctate; facial foveæ linear, as in *E. ephippiata*; antennæ dark, flagellum brownish beneath, the extreme tip reddened; mesothorax with distinct but scattered punctures, dense at the sides, the three longitudinal grooves distinct; tegulæ piceous. Wings perfectly hyaline; stigma dilute brown, nervures paler; venation as in *E. ephippiata* (in both the first submarginal cell is very much longer than second, though the second is very much broader than high). Enclosure of metathorax smooth and shining; sides of metathorax with scanty whitish hair; legs black, with white hair; hind spur with large saw-like teeth; scanty hair at sides of abdomen white; apical fimbria black.

Hab. Queensland, no. 94. 61, also labelled Ridg. 11.93; 702.

Close to *E. depressa*, Smith, but smaller, the clypeus less strongly punctured, the facial foveæ not broad. The vertex has a few whitish hairs (a fringe of pale yellow hairs in *depressa*), and the hair on the inner side of the tarsi is very pale. In *E. subsericea*, *rubricata*, and *ephippiata* the basal nervure is strongly curved, and falls considerably short of the transverso-medial.

Euryglossa calliopsisiformis, sp. n.

♀.—Length a little over 6 mm.

Black; head, thorax, and legs marked with bright yellow, in the manner of a *Calliopsis*; face broad, with the clypeus (except four small black marks, one on each side and two on

the disk), a broad and low supraclypeal mark, a large suboval mark on front, and broad band-like lateral face-marks ending abruptly about the level of the middle of the scape, all bright chrome-yellow; the moderately broad and rather short facial foveæ begin where the lateral marks leave off; front granular, dull; clypeus shining, sparsely punctured; labrum and mandibles (except the dark ferruginous tips, which are bidentate) pale yellowish; posterior orbital margins very broadly yellow; antennæ dark, flagellum pale yellowish-ferruginous beneath; upper margin of prothorax with a yellow band (interrupted in middle), continued to tubercles, which, with a patch below, are yellow; mesothorax dull, gibbous, with a pair of fine yellowish streaks on the disk and a yellowish line over each tegula; scutellum with the posterior margin and a triangular spot on each side yellow; post-scutellum with a median yellow spot; pleura black, with a broad transverse yellow band beneath the wings; region between wings and hind legs pale yellowish; the four posterior trochanters, the hind femora, a patch on middle femora behind, the anterior and middle knees, the anterior and middle tibiæ in front and a streak behind, all yellow; anterior and middle tarsi reddish; tegulæ reddish brown, with a yellow spot. Wings clear; stigma large, it and the nervures dilute sepia; second recurrent nervure joining second submarginal cell a short distance before its end, first joining the cell slightly beyond the end of its first third; basal nervure very strongly bent. Abdomen broad, with a dull satiny surface, very dark brown, with a whitish mark on each side of the first segment near the base, a large lanceolate whitish mark at lateral bases of segments 2 to 4, and a spot in the same region on 5; no hair-bands, but the apex and venter with a thin pale pilosity; venter dark; hind spur serrate.

Hab. Queensland, no. 94. 61, also labelled Ridg. 11.93; 864. One ♀.

Allied to *E. quadrimaculata*, Smith; the two species form a group standing apart from typical *Euryglossa*.

Callomelitta picta, Smith.

Victoria, no. 83. 100; and Franklin, Tasmania, nos. 91-155 and 3468.

The Victoria specimen has a red spot on the middle of the postscutellum.

Allodape simillima, Smith.

Townsville, Queensland, 5.3.03 (*F. P. Dodd*); Cossack,

W.A., no. 91-155; Mor. [=Moreton?] Bay, 1893 (*W. W. Froggatt*); Queensland, no. 319; Queensland (*E. Saunders*).

Allodape unicolor, Smith.

Queensland, no. 4312; Baudin I., no. 91-82; Montalivet I., N.W. Australia, no. 90-126.

The last-mentioned specimen differs in having the second recurrent nervure joining the second submarginal cell almost at its tip, but it does not appear to be a distinct species.

Anthophora æuginosa, Smith.

Of this wonderful species I have before me a male from De Freycinet I., N.W. Australia (no. 90-126), and females from Queensland (*E. Saunders*, *F. P. Dodd*), Adelaide River, and Port Darwin. The following particulars should be added to Smith's description:—

♀.—Green hair of vertex and above strongly mixed with black; pleura with light bluish-green hair; black on clypeus more extensive than Smith's description suggests.

♂.—Clypeus yellow, with the upper lateral margins broadly black.

Anthophora concinna (Klug).

Queenstown, Cape Colony (*E. T. Wells*). ♀. In British Museum.

The second s.m. is very broad below. Superficially the insect looks like a fulvous edition of *A. æuginosa*.

Lithurgus rubricatus, Smith.

Queensland (*E. Saunders*); nos. 93-49 and 324. ♀.

Lithurgus atratiformis, sp. n.

♀.—Length about 14 mm.

Black, without the distinct hair-bands or red apex of abdomen seen in *L. rubricatus*. Head large and round; hair at sides of face dull white, of region between antennæ and cheeks mixed black and white, of vertex and occiput black, of anterior middle of clypeus long and reddish, of mandibles (which are short and obtusely tridentate) reddish; frontal tubercle rather prominent, wrinkled and shining, not bifid, its form much as in *L. rubricatus*; vertex as densely punctured as possible; antennæ dark, flagellum faintly brownish beneath; hair of prothorax and anterior margin of mesothorax dull white, of pleura black, of sides of metathorax

partly black and partly dull white; mesothorax anteriorly very coarsely tuberculate, its posterior third, and the scutellum, dull and densely rugoso-punctate; tegulæ dark reddish brown. Wings smoky, nervures black; second recurrent nervure almost meeting second transverso-cubital. Legs black, with black hair, hind tibiæ coarsely tuberculate on outer side; a small pulvillus present. Abdomen shining black; the first two segments sericeous and scarcely punctured, the others with minute close punctures; hair-bands white, but reduced to hardly visible rudiments, the most distinct appearing as a fine line on the hind margin of segment 5; hair of apical segment black, the extreme apex dark ferruginous; ventral scopa dark, appearing reddish in some lights, a sort of purplish black or dark brown in others; venter, underneath the scopa, with three rather narrow clean-cut white hair-bands.

Hab. N.W. Coast of Australia, no. 69-59.

Allied to the Indian *L. atratus*, Smith, but larger and more rugose.

Saropoda bombiformis, Smith.

Toowoomba, no. 93. 189; ♀. Queensland, "Ridg. 2.92; 691," and 94. 61. ♂.

The hair of the head and thorax above is strongly mixed with black in both sexes, but this is not apparent unless the insect is examined from the side.

Stilpnosoma levigatum, Smith.

Queensland, no. 94. 61, "Ridgw. 11.93; 430." 2 ♀.

Facial foveæ linear, rather short. Thorax with median and lateral linear grooves. Abdomen varying to dark purple-blue. The insect is not like a *Prosopis*, but very closely resembles *Euryglossa*, from which it appears to be an offshoot. The venation is like that of *Euryglossa*, except that the second recurrent nervure joins the second submarginal cell a considerable distance from its end, whereas in *Euryglossa* it joins it at the end.

Parasphcodes talchius, Smith.

Victoria, Australia, no. 85. 108. ♂.

The first r. n. meets second t.-c.; antennæ entirely black.

Parasphcodes Froggatti, sp. n.

♂.—Length about $9\frac{1}{2}$ mm.

Head and thorax black, covered with white lanose pubescence; face narrow; lower half of clypeus (except brownish

edge) pale yellow, this sending a pointed projection upwards in the middle; mandibles dark, reddish in the middle; antennæ broken at fourth joint in type, but apparently all dark except a small reddish spot at extreme base of flagellum beneath; thorax dull, minutely roughened; base of metathorax irregularly ruguloso-plicate, with a sharp rim; tegulæ rufo-fulvous. Wings slightly dusky, a little yellowish, not darkened apically; nervures and stigma sepia-brown; first r. n. meeting second t.-c. Legs black, the anterior and middle knees, the anterior tibiæ broadly in front, and the anterior and middle tarsi more or less, ferruginous; abdomen deep but bright chestnut-red, broad like that of a female (much broader than in *P. talchius*), very closely and minutely punctured, a suffused T-like area on first segment, a suffused median area on third, and all of fourth and following ones black.

Hab. Bathurst, N.S.W., Jan. 18, 1893, no. 124 (*Froggatt*).

Very distinct by its great hairiness and stout abdomen. Nearest, I think, to *P. altichus*. The second r. n. and third t.-c. are strong, not at all weakened as in *P. tilachus*.

Parasphecodes lichatus, Smith.

Perth, W. Australia; 93-198. ♀.

This and the next three species are superficially very similar; they may be distinguished as follows:—

Abdomen smooth and shining, hind legs clear red ..	<i>adelaidæ</i> , Ckll.
Abdomen not so shining, hind legs not red	1.
1. Vertex and mesothorax above with much black hair; abdomen very dark	<i>lichatus</i> , Sm.
Vertex and mesothorax not so	2.
2. Abdomen black beyond third segment	<i>Loweri</i> , Ckll.
Fourth segment red	<i>Tepperi</i> , Ckll.

Parasphecodes adelaidæ, sp. n.

♀.—Length about 9 mm.

Head and thorax black, with thin whitish pubescence, dense and ochreous on margin of tubercles; head large and broad; clypeus very sparsely punctured, depressed in the middle, and with a reddish spot; middle of mandibles reddish; flagellum dark reddish beneath; mesothorax shining, with very minute punctures of different sizes; area of metathorax slightly irregularly wrinkled, but not conspicuously sculptured, its rim rather weak; tegulæ shining dark reddish. Wings faintly dusky, not clouded apically;

nervures and stigma reddish; first r. n. joining second s.m. almost at its end; second s.m. not far from square; second r. n. and third t.-c. much weakened. Anterior and middle legs dark red, hind legs clear red, hair of legs tinged with yellowish; hind spur simple; abdomen convex, shining, dark chestnut-red strongly suffused with black, from the middle of the third segment to the apex practically black, except the coppery hind margins; surface of abdomen not punctate.

Hab. Adelaide; 54-55.

In my table of *Parasphecodes* (Ann. & Mag. Nat. Hist., Sept. 1904, p. 209) this runs to *P. tuchilas* and *P. lichatus*, but it is distinct by the very dark and shining abdomen, wherein, as also in the weakened outer nervures, it resembles rather *P. tilachus*.

Parasphecodes Loweri, sp. n.

♀.—Length about $9\frac{1}{2}$ mm.

Robust; head and thorax black, rather pubescent, the hair white beneath, yellowish cinereous above, forming a little dense light patch on the anterior middle of the scutellum; head broad, but facial quadrangle longer than broad; clypeus shining, with numerous large punctures; mandibles entirely black; flagellum faintly reddish beneath; front, vertex, mesothorax, and scutellum minutely roughened, glistening; area of metathorax scarcely defined, with irregular longitudinal wrinkles only on the basal part; upper corners of posterior truncation rounded; tegulae rather large, dull dark reddish, the anterior margins narrowly hyaline. Wings with a rather strong yellowish tinge; nervures and stigma ferruginous; first r. n. meeting second t.-c., but a little on the inner side; second s.m. higher than broad, somewhat narrowed above. Legs dark reddish brown, with abundant pale pubescence; basal joint of hind tarsi with an apical fulvous tuft; hind spur simple. Abdomen broad, thinly pubescent, very minutely and closely punctured; first three segments chestnut-red, the others black, first segment with a blackish anchor-shaped mark; hind margins of first three segments orange. The second r. n. and third t.-c. are weakened.

Hab. Adelaide, Australia; 52. 124.

Differs from *P. tuchilas* by the hind margins of abdominal segments 1 and 2 not darkened, clypeus with numerous punctures, &c. It approaches *P. melbournensis* in having the enclosure of metathorax diversely sculptured, but differs in other particulars.

Parasphecodes Tepperi, sp. n.

♀.—Length about 9 mm.

Not so robust as the last species, the abdomen being noticeably narrower. The following differences are also apparent on comparison:—Head shorter; clypeus with the punctures hardly so strong; flagellum pallid beneath except at base; tegulæ light rufo-fulvous; scutellum without a light patch; area of metathorax rather coarsely longitudinally wrinkled all over; stigma and nervures dark reddish; second s.m. nearly square; abdomen rather more shiny, entirely red, the apex faintly blackish; venter also red; legs black.

Hab. Adelaide, Australia; 53. 56. Another is marked simply "Australia."

Runs in my table to *P. lucthius*, Sm., but that has rufo-testaceous legs and the fourth abdominal segment fuscous. The names of this and the last species are given in recognition of the work of two well-known Australian entomologists.

Sphecodes tasmaniæ, sp. n.

♂.—Length about $5\frac{1}{2}$ mm.

Head and thorax black; head broad, facial quadrangle broader than long; face with yellowish pubescence; mandibles simple, black basally, pale yellowish in the middle, ferruginous at tips; front and vertex dull, minutely roughened; antennæ long, entirely black, scape long, joint 3 a trifle longer than 4, 5 about as long as 3 and 4 together, flagellar joints very distinct; mesothorax and scutellum nude except for a few pale fulvous hairs (mainly on scutellum), smooth and shining, with scattered inconspicuous very minute punctures, only visible with a good lens; sides of thorax with a very thin griseous or whitish pubescence; area of metathorax large, semilunar, dull, with extremely fine thread-like longitudinal striæ; tegulæ shining reddish, marked with darker. Wings clear, strongly iridescent; stigma large, it and the nervures rufous; first s.m. much longer than the other two united; second very narrow, much higher than broad, narrowed above, receiving the first r. n. at its middle; third higher than broad, but larger than second; second r. n. and third t.-c. weakened, and lower boundary of third s.m. almost obsolete. Legs bright ferruginous, the coxæ, trochanters, and basal half or more of femora black; outer edge of hind tibiæ and the last two joints of their tarsi darkened; abdomen shining, quite without hair-bands, black

basally and apically, with the apical margin of first segment, the second except a median stain, and the greater part of the third chestnut-red; apical plate red, broadly truncate, much broader than long, suggestive of the genus *Proteranea*; venter red, stained with blackish.

Hab. Hobart, Tasmania, no. 91-155.

Because of the smooth mesothorax, this cannot be the male of *S. antipodes*, Smith.

The following three species of *Halictus* resemble *Parasphcodes* and *Sphcodes* in having red abdomens:—

Halictus punctatus, Smith, var. *exlautus*, nov.

♀.—Abdomen broad, entirely orange-fulvous (apricot-colour), except a faint dusky median stain and a small black spot on extreme side of segments 3 and 4. Mandibles ferruginous: facial quadrangle about square; mesothorax green, dullish, with large well-separated punctures, median and lateral grooves distinct; metathorax black, the enclosure large but ill-defined, covered with fine raised lines; tubercles reddish; pleura black; stigma very large, honey-colour; first r. n. joining second s.m. not far from its end; outer nervures weak as in *Chloralictus*; legs red, hind spur simple.

Length about or not quite 6 mm.

Hab. Australia (no other details known), from F. Smith's collection (no. 79.22).

The typical *punctatus* has the abdomen dark rufo-piceous in the middle, red at the sides.

Halictus sphcodopsis, sp. n.

♂.—Very minute; length scarcely 4 mm.

Head and thorax yellowish green, the metathorax a bluer green; face broad, covered with yellowish hair; broad anterior margin of clypeus, labrum, and mandibles (except ferruginous tips) cream-colour; antennæ long, lively ferruginous, the flagellum dusky above; vertex and mesothorax granular, the latter with a little yellowish pubescence, most abundant at the anterior corners; area of metathorax obscurely roughened and wrinkled basally, bounded by a shining margin; tegulæ shining fulvous. Wings rather narrow, clear, strongly iridescent; stigma dark reddish brown, nervures pale; first r. n. joining second s.m. near its end; outer nervures (as in *Chloralictus*) much weakened, in fact almost obsolete. Legs entirely clear orange-ferruginous.

Abdomen small, fusiform, very shiny, bright ferruginous, the apical third strongly infuscated; apex broadly rounded; no hair-bands; suture between first and second segments a little depressed.

Hab. Queensland: no. 94.61; "Ridg. 11.91; 710."

Close to *H. sphecodoides*, Smith, but the colour of the head and legs is different, and I do not feel justified in treating it as the male of that insect, hitherto known only in the female.

Halictus vitripennis, Smith.

A ♀ from Queensland (Ridg. 11.93; 711) agrees with Smith's too brief description and my notes on the type; but there is just a possibility that actual comparison would reveal differences.

XXXIII.—*Descriptions and Records of Bees.*—III.

By T. D. A. COCKERELL, University of Colorado.

PHENACOLLETES, gen. nov.

Tongue and paraglossæ as in *Colletes*; labial palpi small, 4-jointed, the joints subequal, but the two middle ones the shortest; distance between paraglossæ and labial palpi greater than length of former; blade of maxilla about $2\frac{1}{2}$ times as long as wide, rounded at end; maxillary palpi very small, not half the length of maxilla-blade, the six joints stout, the first not easily seen, the second and third cylindrical, the fourth and fifth short, the sixth narrow and pointed; pubescence short, very finely plumose; abdomen free from hair, except a very fine pruinosity, and shaped like that of a *Tachytes* or *Bembecid*; stigma small and narrow (about as in *Leioproctus* as figured by Smith); marginal cell lanceolate, tapering apically; three submarginal cells—the first, on cubital nervure, at least as long as the other two together; the second large, almost square, receiving the first recurrent nervure at the end of its first third; the third about twice as long as the second below, but only as long above, its outer margin regularly curved; the second recurrent nervure enters it a little before the beginning of its last fourth, and is practically straight, with only a slight irregular curvature; basal nervure falling a very little basad of transverso-medial.